

44. (New) The connector system of claim 20, wherein the compliant material comprises a dielectric material.

REMARKS

Claims 1 and 3-43 are pending in this application. By this amendment, claims 1, 20, 22-27, 31, 37 and 43 have been amended, claim 21 has been canceled and new claim 44 has been added. Reconsideration and allowance in view of the following remarks are respectfully requested.

Claims 1, 20, 31, 37 and 43 are rejected under 35 U.S.C. §102(e) as being anticipated by Lee (US 6,050,832). Claims 20-22, 26, 28 and 31-43 are rejected under 35 U.S.C. §102(b) as being anticipated by Appelt *et al.* (US 5,900, 675, hereinafter "Appelt"). Claims 2-4, 8, 10-12 and 32-36 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Appelt. Claims 5-7 and 23-25 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Appelt in further view of Nguyen (US 5,477,933). Claims 9 and 27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Appelt in further view of Distefano (US 6,309,915 B1). Claims 13-19 and 29-30 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Appelt in further view of Sheppard (US 6,284,569 B1).

Applicants respectfully assert that the references, taken alone or in combination, fail to teach or suggest each and every feature of the claimed invention as required under §§102(b), 102(e) and 103(a). Additionally, Applicants assert that the Office has failed to establish a *prima facie* case of obviousness in support of the §103(a) rejections.

For instance, the cited references, individually or in combination, fail to teach or suggest, *inter alia*, a flexible connector, attached between a first and second substrate, having a coefficient of thermal expansion between the coefficient of thermal expansion of the first and second substrate, as recited in claims 1 and 37. In contrast, Appelt teaches a chip carrier 610 having a reinforcement 640 with a coefficient of thermal expansion "close to that of the chip" (see, col. 4, lns. 15-24), not a coefficient of thermal expansion between the chip 630 and the circuit board 620. Lee fails to even consider the coefficient of thermal expansion of the interposer 118.

Similarly, the cited references, individually or in combination, fail to teach or suggest, *inter alia*, a flexible substrate having a core surrounded by a compliant material, and at least three contacts on a first surface of the substrate are alternatingly off-set from at least three contacts on a second surface of the substrate, as recited in claims 20, 31 and 43. Although the Office asserts that Lee and Appelt can be combined to teach such features, Applicants respectfully disagree. Appelt teaches a chip carrier 610 comprising an INVAR reinforcement 610 having a coefficient of thermal expansion similar to that of the chip 630 in an attempt to restrain movement of the carrier 610 in the region of the chip 630. (See col. 4, lns. 15-27). In contrast, Lee's design encourages movement of the various decoupled segments of the interposer 118. (See col. 5, lns. 32-36; lns. 43-45). Accordingly, there would be no motivation to utilize the structure of Appelt, namely the reinforcement 610, which is intended to prevent movement, in combination with the interposer 118 of Lee, which is intended to encourage movement.

With regard to the rejections to claim 42, Applicants assert that Lee and Appelt fail to

teach or suggest, *inter alia*, a flexible connector having a stiffener frame surrounding a perimeter of the connector. Neither Lee nor Appelt addresses the use of a stiffener frame. Furthermore, the addition of Sheppard fails to remedy this deficiency for the reasons stated above regarding the combination of Lee and Appelt.

Regarding the remaining rejections, Applicants respectfully assert that Nguyen, Distefano and Sheppard fail to remedy the deficiencies of Lee and/or Appelt for the above-stated reasons.

Applicants respectfully request withdrawal of all rejections and submit that the entire application is in condition for allowance. However, should the Examiner believe anything further is necessary in order to place the application in better condition for allowance, or if the Examiner believes that a telephone interview would be advantageous to resolve the issues presented, the Examiner is invited to contact the Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'A. Olsen', written over a horizontal line.

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APPENDIX

1. (Thrice Amended) An electronic device, comprising:

a first substrate having a first coefficient of thermal expansion;

a second substrate having a second coefficient of thermal expansion; and

a flexible connector attached between the first and second substrates by a plurality of contacts on a first and a second surface of the connector, wherein all of the contacts on the first and second surfaces alternate with respect to each other, and wherein the coefficient of thermal expansion of the connector is approximately midway between the first and second coefficient of thermal expansion.

20. (Thrice Amended) A connector system, comprising:

a flexible substrate having a core surrounded by a compliant material;

at least three contacts on a first surface of the substrate; and

at least three contacts on a second surface of the substrate, wherein the contacts on the first surface of the substrate are alternatingly off-set from the contacts on the second surface of the substrate.

22. (Amended) The connector system of claim [21] 20, wherein the [laminate material] flexible substrate further comprises:

[a core;

a dielectric material surrounding the core; and]

a solder mask over the compliant material.

23. (Amended) The connector system of claim [22] 20, wherein the [laminate material] flexible substrate further includes a plated through hole.

24. (Twice Amended) The connector system of claim [22] 20, further including a connection between at least one contact on the first surface and at least one contact on the second surface.

25. (Twice Amended) The connector system of claim [22] 20, further including a ground shield over the connection.

26. (Amended) The connector system of claim [22] 20, wherein the core comprises a material selected from the group consisting of: copper-invar-copper, copper, stainless steel, nickel, iron and molybdenum.

27. (Amended) The connector system of claim [22] 44, wherein the dielectric material comprises polyimide.

31.(Thrice Amended) A method of forming an electronic device, comprising:

providing a flexible connector having a core surrounded by a compliant material, and a plurality of alternating contacts on a first surface and a second surface of the flexible connector, wherein at least three contacts in succession on the first surface alternate with at least three contacts in succession on the second surface; and

attaching the flexible connector between a first substrate and a second substrate via the contacts.

37. (Thrice Amended) A method of forming an electronic device, comprising:

providing a first substrate having a first coefficient of thermal expansion;

providing a second substrate having a second coefficient of thermal expansion;

providing a flexible connector having a coefficient of thermal expansion between the first and second coefficient of thermal expansion, and having at least three alternating contacts on a first surface and at least three alternating contacts on a second surface of the connector; and

attaching the contacts on the first surface of the connector to the first substrate and the contacts on the second surface of the connector to the second substrate.

43. (Twice Amended) A connector system, comprising:

a flexible substrate having a core surrounded by a compliant material; and

at least three contacts located at a far distance to a neutral point (DNP) on a first surface and at least three contacts located at a far distance to a neutral point (DNP) a second surface of the substrate, wherein the contacts are off-set.